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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Luca Rigazio

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EXAMINER

JACKSON, JAKIEDA R

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/616,006	Applicant(s) RIGAZIO ET AL.	
	Examiner JAKIEDA R. JACKSON	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. In response to the Office Action mailed August 6, 2008, applicant submitted an amendment filed on December 5, 2008 in which the applicant amended and requested reconsideration.

Response to Arguments

2. Applicant has amended the claims to include limitations that require further consideration of the art. In particular, Applicant has amended the claims to include differentiating between the first speaker and the second speaker by associating speech received on the first channel with the first speaker and associating speech received on the second channel with the second speaker and a speech and wherein the first speaker is employed as the reference speaker based on the quality of the first channel being higher than the quality of the second channel.

Peterson discloses a call center wherein a full transcript is generated of the agent and a customer dialog (column 18, line 61 – column 19, line 14). Peterson also teaches a topic detector and name-entity detector that are trained with sets of calls to better determine what was uttered by the speaker (column 20, line 57 – column 21, line 10), which implies that speech is recognized partially based on the recognition of the interaction. Furthermore, Peterson teaches that speakers are on different channels (column 13, lines 44-46 and column 11, lines 16-23), which is well known in the art of communication, however, does not specifically teach differentiating between the first speaker and the second speaker by associating speech received on the first channel

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with the first speaker and associating speech received on the second channel with the second speaker and a speech and wherein the first speaker is employed as the reference speaker based on the quality of the first channel being higher than the quality of the second channel.

Bartosik teaches a speech recognition device wherein the reference speakers use a microphone that causes the least distortion (paragraphs 0002, 0038, 0041), to improve the recognition.

Popovici discloses language models using dialogue predictions. To interpret a new utterance in on-going interaction, the dialogue module takes into account the linguistic history and the active focus..... The DM makes use of pragmatic expectations about what the user would probably say in the certain dialogue state (pages 815-816, section 2), to improve speech recognition and speech understanding. Therefore, Applicant's arguments are persuasive, but are moot for reasons set forth above.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1, 4, 6-21, 24 and 26-44** are rejected under 35 U.S.C. 103(a) as being unpatentable over Peterson et al. (USPN 6,922,466), hereinafter referenced as Peterson in view of Bartosik and in further view of Popovici et al. (Specialized language models using dialogue predictions), hereinafter referenced as Popovici.

Regarding **claims 1 and 21**, Peterson discloses a speech data mining (mining; column 19, line 59 – column 20, line 21 and column 40, line 57 – column 41, line 4) system and method, hereinafter referenced as a system for use in generating a rich transcription having utility in call center management, comprising:

a speech differentiation module (speaker change detector; column 20, lines 3-57) adapted to receive speech input from the first speaker on a first channel (telephone lines), to receive speech input from the second speaker on a second channel, and to differentiate between the first speaker and the second speaker (telephone handset; column 11, lines 15-43) by identifying speech of the first speaker with speech received on the first channel, and identifying speech of the second speaker with speech received on the second channel (caller and live agent; column 22, lines 15-25 with column 20, lines 42-50);

a speech recognition module (speech recognizer) improving automatic recognition of speech of a second speaker based on interaction of the second speaker with a first speaker preferentially employed as a reference speaker (column 20, lines 3-57); and

a transcript generation module (annotations) generating a rich transcript based at least in part on recognized speech of the second speaker (column 8, lines 1-6 and column 18, line 61 - column 19, line 14 with column 34, lines 46-59 and column 40, line 57 – column 41, line 4), but does not specifically teach differentiating between the first speaker and the second speaker by associating speech received on the first channel with the first speaker and associating speech received on the second channel with the second speaker and a speech and wherein the first speaker is employed as the reference speaker based on the quality of the first channel being higher than the quality of the second channel.

Bartosik teaches a speech recognition device wherein the reference speakers use a microphone that causes the least distortion and associating speech received on the first channel with the first speaker and associating speech received on the second channel with the second speaker (paragraphs 0002, 0038, 0041), to improve the recognition.

Therefore, it would have been obvious to one of ordinary skill of the art at the time the invention was made to modify Peterson's system as described above, to improve speech recognition and to obtain an accurate result (paragraph 0002), as taught by Bartosik.

Petereson in view of Bartosik discloses a speech data mining system, but does not specifically teach a transcript generation module generating a rich transcript based at least in part on recognized speech of the second speaker recognized by the speech recognition module.

Popovici discloses language models using dialogue predictions. To interpret a new utterance in on-going interaction, the dialogue module takes into account the linguistic history and the active focus..... The DM makes use of pragmatic expectations about what the user would probably say in the certain dialogue state (pages 815-816, section 2), to improve speech recognition and speech understanding.

Therefore, it would have been obvious to one of ordinary skill of the art at the time the invention was made to modify Peterson in view of Bartosik's method as described above, to give better results and to improve speech recognition and speech understanding as taught by Popovici.

Regarding **claims 4 and 24**, Peterson discloses a data mining system wherein said speech recognition module is adapted to employ the first speaker (first speaker) as the reference speaker based on availability of a speech model (speaker model) adapted to the first speaker (column 20, lines 42-50).

Regarding **claims 6 and 26**, Peterson discloses a system wherein said speech recognition module is adapted to identify a topic with respect to which the speakers are interacting (topic detector), and to employ a focused language model (statistical model) to assist in speech recognition based on the topic (column 20, line 42 – column 21, line 19).

Regarding **claims 7 and 27**, Peterson discloses a system wherein said speech recognition module is adapted to receive an explicit topic selection from one of the speakers (topic; column 20, line 42 – column 21, line 19).

Regarding **claims 8 and 28**, Peterson discloses a system wherein said speech recognition module is adapted to prompt a speaker corresponding to a call center customer to explicitly select one of a plurality of predetermined topics by pressing a corresponding button of a telephone keypad (touch-tone; column 14, lines 49-66).

Regarding **claims 9 and 29**, Peterson discloses a system wherein said speech recognition module is adapted to identify a predetermined topic associated with an electronic form selected by call center personnel (call center's; column 14, lines 49-66).

Regarding **claims 10 and 30**, Peterson discloses a system wherein said speech recognition module is adapted to extract at least one keyword from a speech recognition result of at least one of the interacting speakers, and to identify a predetermined topic based on the keyword (topic detector; column 20, line 42 – column 21, line 10).

Regarding **claims 11 and 31**, Peterson discloses a system wherein said speech recognition module is adapted to extract context from a speech recognition result of the first speaker, and to employ the context extracted from the speech recognition result of the first speaker as context in a language model (statistical models) utilized to assist in recognizing speech of the second speaker (column 20, line 3 – column 21, line 19).

Regarding **claims 12 and 32**, Peterson discloses a system wherein said speech recognition module is adapted to extract at least one keyword from a speech recognition result of the first speaker (word), and to supplement a constraint list (stock) used in recognizing speech of the second speaker based on the keyword extracted from the speech recognition result of the first speaker (column 20, line 58 – column 21, line 10).

Regarding **claims 13 and 33**, Peterson discloses a system wherein said speech recognition module is adapted to extract at least one keyword from a speech recognition result of the first speaker (word), and to rescore recognition candidates generated during recognition of speech of the second speaker based on the keyword extracted from the speech recognition result of the first speaker (column 20, line 58 – column 21, line 10).

Regarding **claims 14 and 34**, Peterson discloses a system wherein said speech recognition module is adapted to detect interruption of speech of one speaker by speech of another speaker (speaker change detector), and to employ the interruption as context in a language model (statistical model) utilized to assist in recognizing speech of the second speaker (column 20, line 2 - column 21, line 19).

Regarding **claims 15 and 35**, Peterson discloses a system wherein said speech recognition module is adapted to detect an interruption of speech of one speaker by speech of another speaker (speaker change detector), and to record an instance of the interruption as mined speech data (mining; column 20, line 2 - column 21, line 19).

Regarding **claims 16 and 36**, Peterson discloses a system wherein said speech recognition module is adapted to extract at least one keyword from a speech recognition result of at least one of the interacting speakers, to identify a frustration phrase associated with the keyword, and to record an instance of the frustration phrase as mined speech data (frustration; column 21, lines 10-19).

Regarding **claims 17 and 37**, Peterson discloses a system wherein said speech recognition module is adapted to extract at least one keyword from a speech recognition

result of at least one of the interacting speakers, to identify a polity expression associated with the keyword (polite), and to record an instance of the polity expression as mined speech data (column 21, lines 10-19).

Regarding **claims 18 and 38**, Peterson discloses a system wherein said speech recognition module is adapted to extract at least one keyword from a speech recognition result of at least one of the interacting speakers, to identify a context corresponding to at least one of a topic (topic), complaint, solution, and resolution associated with the keyword, and to record an instance of the context as mined speech data (column 21, lines 10-19).

Regarding **claims 19 and 39**, Peterson discloses a system wherein said speech recognition module is adapted to identify a number of interaction turns based on a shift in interaction from speaker to speaker (marks speakers turn), and to record the number of turns as mined speech data (column 20, lines 3-51).

Regarding **claims 20 and 40**, Peterson discloses a system comprising a quality management subsystem employing mined speech data as feedback to at least one of a call center quality management process and a consumptible quality management process (quality; column 11, line 57 – column 12, line 42 and column 19, line 24 – column 20, line 21).

Regarding **claim 41**, Peterson discloses a system wherein said speech recognition module is adapted to employ an interactive focused language model in which yes/no questions relate to context of at least one of preceding or subsequent speech of another interacting speaker (was the call resolved; column 19, lines 3-14).

Regarding **claim 42**, Peterson discloses a system wherein said speech recognition module improves automatic recognition of the speech of the second speaker by employing previous and subsequent (tabulating) and recognized words of the speaker in addition to context of previous and subsequent interactions (interaction) with the referenced speaker (column 2, line 54 – column 3, line 4).

Regarding **claims 43 and 44**, it is interpreted and rejected for similar reasons as set forth in claims 1 and 21. In addition Popovici discloses a system wherein the said speech recognition module improves automatic recognition of the speech of the second speaker by determining a reliability of the recognized speech and, based on the reliability of the recognized speech, doing at least one of the following: confirming the recognized speech (confirm; page 816, section 2), highlighting the recognized speech in the transcript, attempt to recognize the speech again, replace the recognized speech based on another recognition attempt

5. **Claims 5 and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Peterson in view of Bartosik and Popovici and in further view of Liu et al. (PGPUB 2004/0204939), hereinafter referenced as Liu.

Regarding **claims 5 and 25**, Peterson in view of Bartosik and Popovici disclose a data mining system, but does not specifically teach a system wherein speech differentiation module is adapted to use speech biometric.

Liu discloses a system and method for speaker change detection comprising:

use a speech biometric trained on speech of the first speaker to distinguish between speech of the first speaker and speech of another speaker (biometrics mechanism; paragraph 0041), to improve speaker change detection.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Peterson's system wherein speech differentiation module is adapted to use speech biometric, as taught by Liu, to provide fast speaker boundary detection (column 1, paragraphs 0010-0011).

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAKIEDA R. JACKSON whose telephone number is (571)272-7619. The examiner can normally be reached on Monday-Friday from 5:30am-2:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 571-272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David R Hudspeth/
Supervisory Patent Examiner, Art Unit 2626

/Jakieda R Jackson/
Examiner, Art Unit 2626
January 8, 2008